CORPORATE SOCIAL RESPONSIBILITY (CSR) LEAFLET OF CSIR-INSTITUTE OF MICROBIAL TECHNOLOGY

CSIR-IMTECH, SEC 39A, CHANDIGARH, 160036

Corporate Social Responsibility (CSR) with National Research Laboratories

Corporate Social Responsibility (CSR) is a concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders. CSR is generally understood as being the way through which a company achieves a balance of economic, environmental and social imperatives ("Triple-Bottom-Line- Approach"), while at the same time addressing the expectations of stakeholders.

The Companies Act, 2013 has introduced the idea of CSR to the forefront and through its disclose-or-explain mandate, is promoting greater transparency and disclosure. Schedule VII of the Act, which lists out the CSR activities, suggests communities to be the focal point.
(https://www.pwc.in/assets/pdfs/publications/2013/handbook-oncorporate-social-responsibility-in-india.pdf)

Ministry of Corporate Affairs issued a notification [G.S.R.776(E)] through The Gazette of India on 11th October 2019 amending the Companies Act 2013 (Schedule VII) indicating the contributions to National Laboratories and Autonomous bodies engaged in conducting research in Science, Technology, Engineering, Medicine aimed at promoting Sustainable Development Goals (SDGs) to be included under Corporate Social Responsibility (CSR) expenditure. CSIR through its 38 constituents laboratories can offer its expertise, technologies and knowledgebase in many of the areas covered in Schedule VII of CSR.

The areas for contribution under CSR from industry may include but not limited to:

i. R&D in areas covered under schedule VII of CSR including technologies for Sustainable Development.
ii. Industry instituted Scholarships/ Fellowships for Research Scholars
iii. Industry instituted Awards for S&T excellence in SDGs

Accordingly, the funding for research to National Laboratories is also under the ambit of CSR expenditure henceforth. We solicit the participation of industry through CSR to support our research endeavors.

About Council of Scientific & Industrial Research (CSIR), New Delhi

The Council of Scientific & Industrial Research (CSIR) is a R&D organization which has established itself for developing cutting edge R&D knowledgebase in diverse areas of S&T. CSIR has a dynamic network of 38 national laboratories, 39 outreach centres, 1 innovation complex and 5 units across country thus having a pan-India presence. CSIR's R&D expertise and experience is embodied in about 3500 active scientists supported by about 5000 scientific and technical personnel.

CSIR covers a wide spectrum of science and technology – from radio and space physics, oceanography, geophysics, chemicals, agrochemicals, drugs, genomics, biotechnology and nanotechnology to mining, aeronautics, instrumentation, environmental engineering and information technology. It provides significant technological intervention in many areas with regard to societal efforts which include environment, health, drinking water, food, housing, energy, farm and non-farm sectors. Furthermore, CSIR's role in S&T human resource development in the country is noteworthy.

Pioneer of India's intellectual property movement, CSIR today is strengthening its patent portfolio to carve out global niches for the country in select technology domains. CSIR is granted largest number of US patents assigned to any Indian publicly funded R&D organization. On an average CSIR file about 170 Indian patents and 200 foreign patents per year. A significant percentage of CSIR patents are licensed. Amongst its peers in publicly funded research organizations in the world, CSIR is a leader in terms of filing and securing patents worldwide.

CSIR has pursued cutting edge science and advanced knowledge frontiers. The scientific staff of CSIR only constitute about 3-4% of India's scientific manpower but they contribute to about 10% of India's scientific outputs. In 2018, CSIR published 5200 papers in SCI Journals with an average impact factor per paper as 3.457. CSIR also supports and nurtures S&T Human Resource Development through JRF/ SRF/ RA fellowships numbering about 6500.

CSIR has operationalized desired mechanisms to boost entrepreneurship, which could lead to enhanced creation and commercialization of radical and disruptive innovations, underpinning the development of new economic sectors.

About CSIR-Institute of Microbial Technology (IMTech), Chandigarh

Established in 1984, the CSIR-Institute of Microbial Technology (IMTech) is one among the chain of 38 national laboratories, 6 units and 39 outreach centres of the Council of Scientific & Industrial Research. Set-up to be a fore-runner in the niche domain of Microbial Biotechnology, the Institute functions from a built up area of about 3.60 lakh sq. ft. which is spread across Main R&D block, Fermentation block, Animal House, G.N. Ramachandran Protein Centre block, Workshop, Stores and Services area.

The institute is equipped with facilities for modern biology research. They include lab-to-pilot-scale fermenter of many capacities, tissue and cell culture facility, facility for maintenance, preservation and identification of micro-organisms, an animal house, workstations for bioinformatics and Biocomputing, equipment for protein and DNA analysis, a library with around 64,000 references books, microscopy equipment, databases for intellectual property management and competitive business intelligence. The institute is equipped with biosafety level 3 (BSL3) laboratory facility for research work on pathogenic microorganisms.

CSIR-IMTECH is focused to deliver innovative solutions for India’s unmet medical and societal needs. In this direction, we are establishing new partnerships with Industry and Research Institutions in the areas of new drug discovery and technology development.

The new mandate of the institute aims to bring new drugs & technologies to market with disease centric focus. The lab has four discovery units (DAS -Disease Area Specific), namely, Antibiotic Discovery Unit, Virology Discovery Unit, Human microbiome Unit and Biotherapeutics Unit. Scientists at IMTECH aim to constructively synergize with medical and industry experts to define the key medical and product challenges and requirements for translational science. The mission is to deliver solutions in a time bound manner for the challenges society is facing in terms of antimicrobial resistance, dengue, etc. and provide value to the society in terms of the development of probiotics and nutraceuticals.

The Institute's primary asset is a team of more than 55 highly motivated scientists, with a majority of them having several years of training in world-renowned laboratories. Supported by more than 300 well-trained technical staff and graduate students, these scientists have built strong peer credibility both in basic and application-oriented broad thematic areas of molecular biology and microbial genetics, cell biology and immunology, protein science and engineering, and fermentation technology and applied microbiology. These overarching focus areas required enabling research facilities, structures and practices, which IMTech has created over the years, recognized nationally to be the best, and globally at par with the best.

CSIR-IMTech's team of scientists have innovative R&D expertise in the areas of:-

- Cloning & expression of recombinant / engineered proteins & their scale-up,
- Microbial fermentation and process development,
- Understanding / manipulating proteins and their engineering,
- Protein structure determination through X-ray crystallography,
- Molecular microbiology of pathogens especially with respect to drug resistance & vaccine development,
- Immunology of infectious diseases,
- Yeast Genetics,
- Screening of microorganisms for novel enzymatic activities and strain improvement,
- Bioinformatics & high end computational biology,
- Microbial taxonomy and metagenomics, and
- allied areas like Instrumentation, Technology and Business Management and Intellectual Property Protection.

That IMTech could attract and gather a highly motivated and creative team of scientists speaks volumes of the ambience, achievements and a defined focus, which are associated with it. CSIR-IMTech as it stands now, a symbol of a top biotechnology institute in the country.

CSIR-IMTechTechnologies for deployment under Corporate Social Responsibility (CSR) Funds available with Indian industries to achieve Sustainable Development Goals (SDGs)

S.No.	Sustainable Development Goals	Technology Type/Research Area/ (Key Word)	Title of the technology/Research areas
1	**No Poverty**	**Employment Generation (Low-Cost Enzyme production)**	• **Low cost technology for industrially important enzymes such as laccase, xylanase and pectinase, which, are import substitute and have export potential**.
2	**Zero Hunger**	**Increase of Agricultural Yield/ Decline in Deficiency Diseases**	• **Fortified Foods as a solution for undernutrition.** • **Means to tackle Iron Deficiency & Anaemia through Microbial Intervention.** • **Development of databases and platforms/predictive tools using AI techniques for disease forecasting for outbreak of epidemic pathogens.** • **KBR free bread making process-using laccase.**
3	**Good Health and Well-being**	**Affordable Healthcare/ Infant Mortality/ Anti-Microbial Resistance (AMR)/ Biosimilars**	• **Mother's Plasma Gelsolin Estimation Kit To Predict Premature Birth and save lives at birth.** • **Neo-Tissue plasminogen activators for extended life clot busters.** • **Biosimilar of Granulocyte-Colony Stimulating Factor (Filgrastim) and PEGylated G-CSF (Pegfilgrastim) for prevention and treatment of chemotherapy-induced neutropenia. It can also be used during treatment of leucopenia, AIDS, sepsis and in bone-marrow transplantation.** • **Novel cell-penetrating peptide IMT-P8 for developing topical/transdermal formulations for safe and efficacious delivery of drugs across the skin and to control MRSA infections.**

			• **Development of a biosimilar of Adalimumab for treatment of rheumatoid arthritis.** • **Typhoid & Coliform Test Detection Kit for detection of bacteria in water.** • **On-spot dual test kit for detection of explosive 'Ammonium Nitrate'.** • **Novel antibiotic against colistin resistant MDR Klebsiella.** • **Novel and promising efflux pump inhibitors (EPI) to control bacterial drug resistance.** • **Screening of a novel candidate against Tuberculosis.** • **Drug Discovery for Neurodegenerative diseases like Parkinson.** • **Probiotic mediated disease prevention and growth enhancement in poultry industry to combat Anti-Microbial Resistance (AMR) burden using green alternatives.** • **Development of Gut Microbiome Consortia for treatment of Severe Alcoholic Hepatitis (SAH).** • **Anti-Microbial peptides/ bacteriocins as alternatives to combat drug resistant pathogens.**
4	**Quality Education**	**Community Science/ Jigyasa/ Vigyan Shivir**	• **Skill Development Program.**
5	**Clean Water and Sanitation**	**Pesticide degradation/ Bioremediation/ Clean Water**	• **Removal of colour, odour, pesticides and toxic heavy metals from waste water and contaminated environment to help in restoring tertiary water resource.**
6	**Decent Work and**	**Skill Development/ Skill India/**	• **High End Skill Development Centre to upgrade skill set of**

	Economic Growth	**Skill Training for Employment**	**graduates and post graduates for better employability.** • **Activities being carried out under Biochemical Engineering Research and Process Development Center (BERPDC) which is a fermentation facility & Microbial Type Culture Collection (MTCC) and Gene Bank which is a bio bank to support MSME sector.** • **Industry tailored and job oriented training programmes.**
7	**Reducing Inequality**	**Manpower Training/ Human Resource Generation**	• **Various programmes under Skill Development and Human Resource Development to be listed out in reducing inequalities.**
8	**Life Below Water**	**Marine Wealth**	• **Development of Industrial enzymes from marine sources for the detergent industry.** • **Development of bioactive exopolysaccharides from marine wealth for industrial applications.**
9	**Life On Land**	**International Depositary Authority (IDA)**	• **Approximately 14000 microbial strains are deposited at Microbial Type Culture Collection and Gene Bank and are supplied to the customers for diverse applications. The microbial strains include actinomycetes, bacteria, fungi, yeasts and plasmids.**
10	**Partnerships for the Goals**	**International Collaborations/ Funding**	• **Open for national & international academic and industrial collaboration/ partnerships for finding solution to unmet medical and societal needs through S&T intervention**

For more information, please contact:

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